

Notice of Allowability

Application No.

09/728,629

Examiner

Trent J Roche

Applicant(s)

FLANAGAN ET AL.

Art Unit

2124

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment A, filed 17 June 2004.
2. ☒ The allowed claim(s) is/are 1-17.
3. ☒ The drawings filed on 20 March 2001 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

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DETAILED ACTION

1. This office action is responsive to Amendment A filed 17 June 2004.
2. Per applicant's request, amended claims 1-3, 6-9, 12, 14 and 17 have been entered. Claims 1-17 are pending.
3. Claims 1-17 have been examined.

Response to Arguments

4. Applicant's arguments, see pages 9-14 of the remarks, filed 17 June 2004, with respect to claims 1-17 have been fully considered and are persuasive. The rejections of claims 1-17 have been withdrawn.

Allowable Subject Matter and Examiner's Statement of Reason(s) for Allowance

5. Claims 1-17 are allowed.
6. The following is an examiner's statement of reasons for allowance:

The prior art of record, taken alone or in combination, fails to teach or reasonably suggest a method of concurrent program analysis for detecting potential race conditions as recited in independent claim 1. Found prior art, specifically U.S. Patent 5,822,588 to Sterling et al fails to teach a method for detecting potential race conditions, comprising the steps of *receiving a source code of the computer program, the source code including an element annotated as either thread-local or thread-shared, determining if the element is annotated as thread-shared or thread-local, spawning, by the computer program, a plurality of threads that are capable of being executed concurrently, and verifying the validity of the thread-local annotation if the element is annotated as thread-local by determining whether the element annotated as thread-local can be accessed through more*

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than one thread... (claim 1) Similar features are also claimed in independent claims 2, 3, 6, 8, 9, 12, 14 and 17.

Instead, Sterling et al discloses the ability to annotate source code with specific NOTE annotations which inform the analyzer of the intended purposes for locks specified in the source code. Further, the analysis tool disclosed in Sterling et al performs analysis to ensure that the lock annotations are performing properly. Sterling et al does not provide the ability to annotate an element as thread-shared or thread-local, and verifying the validity of the annotation through the analysis tool.

Further, alternate prior art, specifically U.S. Publication 2002/0120428A1 to Christiaens discloses a system for determining race conditions in concurrently executing programs. Christiaens does disclose the ability to verify the validity of an object marked as thread-local or thread-global, and determining whether more than one thread can access that object, however, Christiaens does not provide the ability for a developer to annotate the source code, nor the ability to analyze the source code annotations for validity. Rather, the source code is run through an interpreter containing a monitor, enabling the monitor to tag data elements automatically as either thread-local or thread-global, depending on the number of times the data element is accessed by threads.

7. For these reasons, claims 1-17 are allowed. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trent J Roche whose telephone number is (703)305-4627. The examiner can normally be reached on Monday - Friday, 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on (703)305-9662. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Trent J Roche
Examiner
Art Unit 2124

TJR


ANIL KHATRI
PRIMARY EXAMINER

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